EDUC 893: Organizational & Social Aspects of Learning Technology Design

Web Design Project Rationale:
Online Community of Middle Eastern Petrochemical Training Staff

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Introduction, Audience & Problem Statement

The target middle eastern country is the second largest producer and exporter of petrochemical products in the Middle East and yet its whole petrochemical industry is completely government-owned and regulated by the National Petrochemical Company (NPC). Almost fifty subsidiaries (or affiliated companies) in various regions all over the country are currently working under the regulation of this company. There is a training department in every one of these organizations as well as in the NPC Central Office. The duties of these training departments are similar and can be summarized in planning, designing, assigning resources, implementing and finally evaluating various training programs (e.g. courses, workshops, seminars and conferences) for various levels of employees from janitors up to the management level. The organizational members working in these training departments (referred to as "training staff" in this project) constitute the group that I am seeking to support with my online space. Currently, training staff in NPC's subsidiaries are a weak Community of Practice (CoP) and my website is intended to support them become a vibrant CoP.

My information about this group is based on my active participation in one of these training departments for three months. Based on my first-hand investigation, these people are often in need of professional advice and ideas for their daily work-related issues such as finding the best resources for the training courses, dealing with limited budget and dividing it reasonably among their tones of duties. They also feel unsupported in terms of career development and dealing with basic problems such as indifference of top managers with regard to their educational ideas. When there is no experienced and knowledgeable expert among them, which is often the case, they usually seek help from irrelevant people in the organization such as managers or from outside their workplace such as their old classmates in university and sometimes even from the course trainers! Fortunately, most of the NPC subsidiaries have similar context and issues. So the training staff will welcome any opportunity to share their working experiences and learn from their colleagues in other subsidiaries. That is why they are well matched with the concept of CoP.

The motivation, however, is not always sufficient! Training staff have a strong motivation to create their own CoP but face-to-face meetings and interaction is not possible for them at present. They are scattered all over the country and work full time. The option of regular travelling to a common city and meeting with each other there is not aligned with their work and family life. Using phone for a meeting is not also an option because many of the subsidiaries have limited access to necessary technological facilities such as video conferencing. Since there is usually no problem in their access to internet, the optimal option for them would be an online space in which they can easily interact with each other from where they are.

A well-designed online environment is a catalyzing infrastructure that will give the training staff several benefits. The main benefits include: (1) They solve their everyday issues more effectively. (2) They build collective plans to develop their career. (3) They create a common independent and powerful identity as vanguards of advancement in the national petrochemical sector. (4) Their active participation will gradually pave the way to the creation of common goals, norms, rules and their own culture. (5) This online environment will be a valuable memory for their co-constructed knowledge and shared experiences. Overall, a group is always more powerful than an individual.

Analysis of Current State of Affairs

Based on Wenger et al.'s structural model for CoP (2002), the CoP elements in the community of training staff are briefly as follows:

(1) Domain: vocational training and instructional design,
(2) Community: training staff at the different subsidiaries of NPC,
(3) Practice: basic duties of instructional designers which include needs analysis, planning, designing, finding resources, implementing and evaluating the training programs for various levels of employees

To analyze the second element, community, I start with explaining who exactly the training staff of NPC subsidiaries are and what are their characteristics. A high proportion of these people are young with at least a bachelor's degree which is often not related to Education. They usually have the basic skills of using computer and internet. These two characteristics are the reasons for what I mentioned in the previous section about their lack of experience and relevant knowledge. Some of these staff, however, are graduated from Education majors, have years of experiences in the field of training and instructional design, or are currently studying in the field of Education or related areas. These specific people can be considered as the experts of the community who can coach others based on their experience or academic knowledge and coordinate the online community activities (at least for the first months after the launch of the website). They will constitute the core of the community (Wenger et al., 2002).

Training staff are usually smart and have more than average communication skills as their job demands (e.g. communication with other departments' employees while conducting needs analysis and with the instructors while inviting them over). The training department in each subsidiary is composed of one manager plus at least three training employees. This number can increase to seven depending on the size of the organization.

In terms of the third element of CoP, practice, the training staff members of NPC subsidiaries are actually involved in different phases of instructional design. They go everywhere in the organization and talk to different employees to figure out what type of training they need to improve their work (needs analysis). They design a whole training course or modify an existing design based on the updated needs analysis and evaluation results. They search for instructors and materials, provide rooms and facilities and schedule the time for ready-to-run training courses. They coordinate with different departments to schedule the time of training programs to make the possibility of having as many trainees as possible. They also coordinate the implementation of the course and finally they evaluate the courses based on the evaluation forms provided for them by NPC central office. This process goes on and on for each training course as their continuous practice.

They also conduct some administrative works such as providing reports for the managers and the central office as well as doing paper work to gain permission for facilities and resources. Sometimes, they plan for conducting shared training programs with other subsidiaries for various reasons (e.g. lack of resources, not sufficient trainees in one subsidiary, etc.). In this way, they cooperate with their colleagues in other subsidiaries to deliver a training program. However, this

collaboration will last only for a while and after that, the level of interaction between them reduces significantly.

For all of the above duties to be done, they use usual tools in administrative environments such as telephone and computer. The important tool for them is language (in the format of both verbal and written) by which they communicate with different stakeholders (including management, other departments, trainers, trainees, and sometimes their colleagues) in order to implement effective, well-designed training courses.

As I mentioned earlier, the level of interaction between the training staff at different NPC subsidiaries is not high. Except infrequent instances of actually working together to develop mutual training programs, there is another opportunity for all of them to meet and interact face-to-face with each other. This event is an annual national gathering for NPC training staff all over the country which is held by the central office in the capital city (Tehran). Unfortunately, this event does not seem very effective and helpful for them since they usually do not pre-arrange an agenda to their informal discussions and therefore, they usually do not use this opportunity to address the issues in their shared domain well. Of course, there are interactions between them during the gathering but not as effective and fruitful as it can be. Particularly, they could have made use of this event as a great opportunity to discuss around long-term issues such as their professional development and improving their job conditions. This shows that their shared domain and values are not as strong and inspiring as necessary to make them gather and interact regularly.

To sum up, all of the three elements of CoP need to be enhanced to make this potential community powerful. By having an online infrastructure ready for them to use, the training staff have a good chance of focusing on their shared domain, defining it and shaping their norms and rules of communication around it. It is also possible for them to overcome the physical and time barriers for their interaction and start an efficient way of improving their practice together. They even have a chance to create a standard job description for their current practice as there is no well written explicit one in the NPC official documents. Having established their community of practice, they will start learning from each other and developing their knowledge and experience in the context of their work together (Schlager & Fusco, 2004).

Design Specification and Prototype

My general approach in designing this online space is to have a simple structure with few fully functional elements and to avoid fancy components (e.g. images and animations). This approach is based on Wenger et al.'s first principle (2002) in which he recommends less structured design at the beginning of CoP in order to make an infrastructure for smooth and natural evolution of the CoP and letting more structure be evolved out of demand. Leaving the structure free to change for the training staff also helps them feel at home in the website and strengthens the sense of community. Another reason for selecting this approach is the low speed of internet accessible by most households in this country.

My design is based on four assumptions: First, I assume this online CoP will have a coordinator. This informal leader is more likely from the core of community and has responsibilities pointed out in Schlager & Fusco's (2004) Guidepost 6 and Wenger's et al. (2002) Principle 3. Among

these responsibilities are editing members' inappropriate inputs, updating the website's events and news, arranging the meetings, and confirming the identity of registering applicants to assure genuine participation and prevent lurkers (Technical Condition 4 in Feenberg & Bakardjieva, 2004). The coordinator will be elected by the members through polling features which should be placed in the website temporarily (I have not designed this feature in my prototype). Second, I assume the website will have a technical support from a trusted expert(s) inside or outside the CoP who will be responsible for troubleshooting the website's technical problems, answering the members' technical questions, and adjusting the features of the website based on members' demands. Third, I assume that two levels of accessibility is sufficient for the pilot launch of the website: one for outsiders or prospective members of the CoP, which lets them visit the homepage and "About Us" page to get a sense of what is going on in the training staff community. The other level is for members, which allows them to go through every page. The level of accessibility at this level is equal for all of the members of the community. Separating these two levels of accessibility provides the members with a sense of privacy when contributing to the website (Technical Condition 1 in Feenberg & Bakardjieva, 2004). Finally, I assume that before the pilot launch of the website and every few months afterwards, the process of "evaluation and revision" of the design of the website will be conducted and the different elements of the website (such as level of accessibility and security of the website) will be adjusted based on collective decisions of the members of the CoP (Schwen & Hara, 2003). This process will be done through using polling features supervised by the coordinator.

The major common features in most of the pages of the website are as follows:
(1)   Banner: a simple image with an explicit name for the CoP.
(2)   Chat box: Based on the fourth principle in Wenger et al. (2002), creating a space for private, one-to-one, informal discussion between the members will enhance the sense of aliveness among the members of CoP. Also, using synchronous chatting may help the members solve some of their urgent problems more quickly. As soon as the member logs in, the chat box automatically shows him or her as an online member. The member can also see other online members in the chat box and chat with one or more of them if he or she desires. There will be an option to chat with more than one member in one chat room in the pilot version of the website.
(3)   Footer: This section has different links most of which are aimed for newcomers. For example, FAQ is helpful for newcomers to address their questions of how to involve in different activities in the website such as editing other's inputs and creating a work group. These FAQs are actually some norms of interactions between this Cop's members. They will also find some generic instructions about the technical aspects of the website such as the requirements for using the chat box, etc. If they do not find their questions among the existing lists of questions in this section, they can type down their question in a specific space in this page and seek help from the coordinator/technical support. The footer also has a link providing the email address and telephone number of the coordinator and technical support in a case of needing their help (Guidepost 1 in Schlager & Fusco, 2004).

There are six main pages to go which are identified as buttons of the navigation bar:
   (1) Home is the main page of the website. It is actually an updated snapshot of the recent inputs and activities in different sections of the website. This design makes the members as well as visiting outsiders feel this CoP is real and alive. Wenger et al.'s believed that

interactions and events are indicators of aliveness of the community. Since most of the inputs in this website will be in response to other members or in request of their response, they are actually interactive activities.

The homepage also informs the visitors of the upcoming events and relevant news. The whole CoP's calendar of events of each month is also placed at the sidebar of this page. This calendar plus the planned collective activities in the CoP work groups (discussed in this section) will be like a rhythm for this CoP (Principle 4 & 7 in Wenger et al.; Technology Affordance 2 in Feenberg & Bakardjieva, 2004: p. 19).

 The calendar highlights the dates on which a meeting, or a relevant conference and workshop is planned to be held. Even some work deadlines which is common for most of the subsidiaries are included in the calendar. In this way, the members share the mutual sections of their practice and have a feeling of one work all at the same time.

The snapshot besides a brief introduction to this online CoP at the homepage also gives the newcomers the taste of what would be the types of activities and interactions in this online CoP.

After logging in the website, the chat box will be added at the bottom of the sidebar.

(2) About Us is the page aimed for prospective members and visiting outsiders which actually contains a brief description of (1) what is the shared domain in this community, (2) what are its main goals to follow, (3) what are their values, (4) who is involved in this community, (5) what are the main activities of the community, (6) what is the history of this CoP, and (7) how it is continuing to live now. Actually, these are descriptions of the three elements of this CoP (Wenger et al., 2002) and their explicit values (Principle 5 in Wenger et al., 2002). By explaining specific characteristics of this CoP's members and their practice in this page, NPC training staff will announce an independent identity for themselves (Feenberg & Bakardjieva , 2004).

These statements should be adjusted based on the demand of the members as the CoP evolves and some of its values or activities may change. Updating this page based on the recent agreements of the members is another responsibility of the coordinator (Principle 1 in Wenger et al., 2002).

(3) Q&A Forum, is a place for the members to discuss around their issues and concerns in the workplace. In this page, they can seek help from their peers to solve their work problems in areas they are less knowledgeable or less experienced (e.g. a young training staff seeks help from her more accomplished peers to deal with her boss). They also can share their ideas with others in response to questions about those areas in which they are more experienced (e.g. that training staff in the above example shares a course outline that she improvised for a specific training course) (Schwen & Hara, 2003). In this way, there will be equal opportunity for all of the members to receive advice from the more accomplished experts of training all over the country (Schlager & Fusco, 2004). Each member can start a new thread and open up a discussion in that. It is assumed that this page will be used mostly on public discussions about day- to-day work issues and concerns (Principle 4 &5 in Wenger et al., 2002). Sense of aliveness is also well in this everyday interactions (Wenger et al., 2002).

By clicking on the topic of each thread, the member is led through a page containing all the posts in thread. The threads with new posts which are not read by the member so far

will automatically have a different color from other threads (like the difference between read and unread emails in most of e-mail programs). In this way, the members can track how far they have followed the discussions so far (Technical Condition 2 in Feenberg & Bakardjieva, 2004).

The threads in which there has been no interaction for a while (say six weeks) will be automatically archived in a new page. So at the sidebar, there will be a link to archived threads which are classified based on the date of their last posts (Technical Condition 3 in Feenberg & Bakardjieva, 2004). There will be also a search engine in the forum page to locate the old discussion threads based on their topic. This feature is aligned with the concept of CoP website as a memory of co-constructed knowledge and experience. Using this feature can help the members use this memory to see if there is already a solution among the discussions around their newly emerged problems. The members will have the opportunity to contribute to the old threads if they have come up with a new idea or experienced a new approach towards the problem discussed in these threads.
The main goal here is to build an infrastructure for the members to learn from each other, co-design a solution for their common problems, and therefore moving towards more expertise at the centre of their CoP (Guidepost 1 in Schlager & Fusco, 2004).
In this forum, one can have different roles in the discussions: sometimes as an expert, sometimes as a help seeker and sometimes just as a visitor (Principle 3 in Wenger et al., 2002; Guidepost 3 in Schlager & Fusco, 2004).

(4) Work Groups, is an infrastructure for collaborative group activities mostly aimed for professional development (this concept needs to be more specifically defined and then updated through negotiation with the CoP members during its creation and evolution). In this section, members form work groups, collaborate with each other around a particular issue or topic (e.g. creating a standard training course evaluation form) and share their product with all the members of CoP (Guidepost 3 in Schlager & Fusco, 2004; Technical Condition 1 in Feenberg & Bakardjieva, 2004; Schwen & Hara, 2003). Even a topic at the Q&A Forum which is considered by the members to be valuable to work upon collaboratively can be brought here (e.g. designing a course outline for a totally new training course could be first discussed in the forum and then be transferred in the work groups page). However, the necessary condition to form any work group is having a few members interested and motivated enough to work on the topic with each other. Most probable scenario is one or two members of the CoP decide to propose establishing a work group around a topic such as developing a job description for the NPC training staff. The CoP coordinator will announce their interest to other members by sending email to the CoP mailing list or posting an ad in the forum. When sufficient number of members express their interest to work on the topic, the coordinator direct them to discuss about the scope, the goal, the expected outcome of their group work and the division of labor among themselves. Although these matters will be professional projects, they will help the potential work group to define their own identity and foster a sense of collectivity among each other. They will also assign one of them as "group captain" who will be responsible for keeping the group on schedule and summarizing the recent accomplishment of the group every month. Group captain then gives this brief report to the CoP coordinator so that he or she can put this report at the homepage for at least one

round, in order to let the other members know the level of progress in the group work and to motivate the group members to continue their contribution (Guidepost 3 in Schlager & Fusco, 2004).

Each work group will have its own wiki space (like the one we had for our Activity Theory project in this course). In this space, the group will share their ideas, their knowledge, their experience and even the outcome of their participation in a relevant conference or workshop. They will edit, reflect and build upon each other's inputs. It is another opportunity for the members to learn from each other and collaboratively move towards the centre of their community (Guidepost 1 in Schlager & Fusco, 2004). Every member of the community is allowed to visit the wiki pages, follow its activities and even contribute to the inputs if needed (Guidepost 3 in Schlager & Fusco, 2004).
The work groups whose work is done will be transferred to the archived work groups at the sidebar of the "Work Groups" page (Technical Condition 3 in Feenberg & Bakardjieva, 2004). In this section, the members can play multiple roles: sometimes as work group members, sometimes as visitors, sometimes as the group captains, and more generally central in one group activity but peripheral in other groups (Principle 3 in Wenger et al., 2002; Guidepost 3 in Schlager & Fusco, 2004).

(5) Resources, is a place for members to share information on different resources they have used for their practice (Schlager & Fusco, 2004: p.137). By clicking on a button at the sidebar named "Recommend a Resource" and then filling out an online form, the members can recommend to their peers what they have found in terms of effective resources for different phases of instructional design (ID) for training programs (including instructors, materials, design documents, or even online program developers). They can also use this space to recommend some intellectual resources such the relevant books, videos, podcasts, images, etc. Those of training staff members who are currently studying Education can contribute a lot here helping their peers informally study academic resources with them. There will be an option for the members to post comments for each recommended resource (e.g. for expressing opposite experience on the usage of that specific resource). At the first version of the website, there will be only an option to post some information or links about the large-sized resources (e.g. videos, images and podcasts) because of the low speed of internet in national households. As soon as this problem is solved, adding a feature for members to upload their recommended resources will hopefully not take so much effort. This page contains a list of archived resources classified based on the category of ID / Intellectual resources (Technical Condition 3 in Feenberg & Bakardjieva, 2004). This page provides an opportunity for the members with different skills and experiences to co-create a valuable common list of the resources for their practice (Guidepost 1 in Schlager & Fusco, 2004).

(6) Members, is the page of members' profiles including some standard fields such as the NPC subsidiary they work now, their specific interests in their shared domain and practice, their contact, the address of their webpage or blogs and an "About Me" field to add any other information they want to share with others about themselves. The work groups that they are currently active in are also shown and automatically updated in the profiles. Also, they can upload their photo in their profile. At the bottom of the photo,

their level of participation in the website activities is shown. The level of participation would be an index computed based of their log data as well as their frequency of contributions in different sections of the website such as forum and work groups. This formula should be developed before the pilot launch of the website.

By accessing to the list of all members and their profiles, CoP members can get an idea of the real tissue of their CoP and find peers with similar interests. They will find out how diverse and active their CoP is.

Context of Use & Evolution over Time

Based on my experience and my informal discussions with some of the training staff in NPC subsidiaries, I will expect the pilot version of the website to be launched with almost ten people as its first formal members. These people will be the main advisors to complete the design of the pilot website and the CoP's "About Us" page. The most challenging part of the whole project will be this early period of time in which the first group of members will start working together, getting familiar and comfortable with each other as well as with different features of the website, and committing time and effort to create stability. They will be also asked to evaluate the design of their website and help improve the next version of it. After a few months, I assume that many other training staff members who work with these members in the training departments will be informed of the existence of such a website by the current members. They will check out the website and consider becoming its members. I assume that the process of informing the training staff of NPC subsidiaries all over the country will be through informal invitations from the first members of the website and it will take few months or even a year for all the NPC subsidiaries to be aware of a CoP due to the constraints of distance and lack of face-to-face interactions.

The first coordinators of the online CoP will need the help of other members to answer the prospective members' questions, and help the newcomers get familiar with the different activities of the website. After this critical period of time, the CoP will become more stable and members smoothly use the website to accomplish its goals. The changes afterwards will not usually be radical and threatening the life of the website. For example, the members of the CoP may demand a reasonable level of security and accessibility for different sections of their website which should be adjusted by the help of technical support. They may also use the features of the website in different ways. An example is to start arranging face-to-face meetings and social events outside the virtual environment at least between the training staff who live in the same regions but work in different subsidiaries (as recommended by Schlager & Fusco (Guidepost 7, 2004); Wenger et al. (Principle 4, 2002)). For this purpose, the forum may be used to discuss the best time and place for the meetings and the coordinator will be responsible to add these events to the calendar of the CoP. Face-to-face meeting will definitely enhance the sense of belongingness and will be like a heart beat for the CoP.

One of the main challenges of this CoP will be finding financial resources supporting the implementation of the website and improving its design over time, hiring a technical support staff, etc. The CoP may need to think about adding a fund raising feature to the website so that the members pay small share for each adjustment project.

Another challenge is to embrace an official copyright for the website. The whole CoP is the main owner of the website and its content. Changes in every element of the website is based on the

cumulative demand of the members not a single one. Therefore, the members should learn to acknowledge this ownership while applying its content to their practice.

Finally, I should note that although I created the first version of the website in English, the final version of the website will be supplied in the local language. However the design and the content will remain the same.

Assessment & Reflections

As Feenberg & Bekardjievas noted (2004), it is hard to measure the success and failure in online communities. However, I believe that by continuous monitoring of the CoP evolution by core members of the community and trusting the collective idea about change, the likeliness of success will be increased. If successful after five to ten years from its starting point, I imagine that the main components of the online space, although may have been modified, will remain active and productive. The members will express passion and satisfaction about being a member of this CoP. They are fully engaged in learning from each other and applying that in their practice. Even the list of members will change from time to time, and the CoP takes a life of his own.

Strengths of my design: I have addressed the typical needs of NPC training staff, based on my firsthand experiences with them. I have designed a simple-structured website which is compatible with the research theories, and the conditions of living in the country. In this way, I expect the training staff community to embrace it and find it quite useful.

Weaknesses of my design: Still many details about the different sections of the website should be added based on the members' ideas. The design may not look very professional and needs more technical support to function smoothly.

Limitations: The current version of my design has limitations in terms of not allowing the members to share large-size files due to the limited speed of internet in national households.

Tradeoffs: Although creating the website and its supporting document in English make a good opportunity for me to receive good insights from my instructor and peers, I will need to take time and energy to transfer the website into the local language and check out its elements with national colleagues before the pilot phase.

All in all, this project has been the first attempt based on the four phases of design recommended by Schwen and Hara (2003) and I need to work further to prepare the design for a successful implementation.